



(11) **EP 1 109 101 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
07.08.2002 Bulletin 2002/32

(51) Int Cl.7: G06F 11/25, G06F 11/273

(43) Date of publication A2:
20.06.2001 Bulletin 2001/25

(21) Application number: 00311190.3

(22) Date of filing: 14.12.2000

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

- Thieret, Tracy E.
Webster, New York 14580 (US)
- Coleman, Charles P.
Rochester, New York 14621 (US)
- Rockwell, Ronald M.
Rochester, New York 14607 (US)
- Duke, Charles B.
Webster, New York 14580 (US)

(30) Priority: 16.12.1999 US 464597

(71) Applicant: Xerox Corporation
Rochester, New York 14644 (US)

(74) Representative: Skone James, Robert Edmund
GILL JENNINGS & EVERY
Broadgate House
7 Eldon Street
London EC2M 7LH (GB)

(72) Inventors:
• Sampath, Meera
Penfield, New York 14526 (US)

(54) **Systems and methods for failure prediction, diagnosis and remediation using data acquisition and feedback for a distributed electronic system**

(57) By using monitoring data, feedback data, and pooling of failure data from a plurality of electronic devices, real-time failure prediction and diagnoses of electronic systems operating in a network environment can be achieved. First, the diagnostic system requests (S110, S120) data on the state of a machine and/or its components and collections thereof as part of the machine's normal operation. Secondly, real-time processing (S160) of the data either at the machine site or elsewhere in the distributed network allows for predicting or diagnosing system failures. Having determined and/or predicted a system failure, a communication to one or more remote observers in the network allows the remote observers to view the diagnostic information and/or required action to repair the failure. Furthermore, interrogation of either the particular electronic system, or a database containing data on similar electronic systems by the diagnostic server allows the diagnostic server to refine original diagnoses based on this population data to achieve a comprehensive failure prediction/diagnosing system.

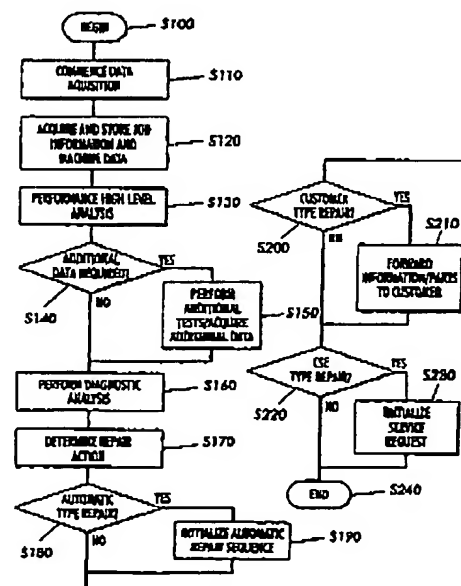


FIG. 4

EP 1 109 101 A3

European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 00 31 1190

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (INCL.7)
X	US 5 887 216 A (MOTOYAMA TETSURO) 23 March 1999 (1999-03-23) * abstract; figures 1,16 * * column 2, line 40 - line 54 * * column 3, line 13 - line 23 * * column 4, line 17 - line 42 * * column 5, line 20 - line 23 * * column 10, line 9 - line 21 * * column 17, line 34 - line 49 *	1-10	606F11/25 606F11/273
X	US 5 835 816 A (SAWADA MASAITHI ET AL) 10 November 1998 (1998-11-10) * column 2, line 16 - line 30 * * column 3, line 40 - line 67 * * column 10, line 61 - line 67; claims 1-5 *	1-10	
X	US 5 844 808 A (KONSMO ET AL) 1 December 1998 (1998-12-01) * column 1, line 15 - column 4, line 20 * * column 6, line 26 - column 9, line 3 * * column 11, line 7 - line 10 *	1-10	
X	NAOKI URA ET AL: "REMOTE MAINTENANCE FUNCTION FOR DISTRIBUTED CONTROL SYSTEM" ADVANCES IN INSTRUMENTATION AND CONTROL, INSTRUMENT SOCIETY OF AMERICA, RESEARCH TRIANGLE PARK, US, vol. 48, no. PART 3, 1993, pages 1557-1564, XP000428426 ISSN: 1054-0032 * the whole document *	1-10	606F G036 H04N
X	EP 0 599 606 A (XEROX CORP) 1 June 1994 (1994-06-01) * column 1, line 1 - column 8, line 29 *	1-10	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 June 2002	Examiner Herreman, 6
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document		Y: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons A: member of the same patent family, corresponding document	

EPO FORM 1403 (01.02.98) (P)

EP 1 109 101 A3

European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 31 1190

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (INCL.7)
X,D	EP 0 895 399 A (XEROX CORP) 3 February 1999 (1999-02-03) * abstract * * column 14, line 48 - column 16, line 32 * * -----	1-10	
			TECHNICAL FIELDS SEARCHED (INCL.7)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 June 2002	Examiner Herreman, G
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosures P: intermediate documents T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document			

EPO FORM 1600 (03.03.02) (P.02/02)

EP 1 109 101 A3

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 31 1190

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

11-06-2002

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5887216	A	23-03-1999	FR	2762411 A1	23-10-1998
			JP	10271261 A	09-10-1998
US 5835816	A	10-11-1998	JP	8195849 A	30-07-1996
			US	5715496 A	03-02-1998
US 5844808	A	01-12-1998	NO	941202 A	02-10-1995
			AT	187270 T	15-12-1999
			AU	2225495 A	23-10-1995
			CA	2186002 A1	12-10-1995
			DE	69513651 D1	05-01-2000
			EP	0757826 A1	12-02-1997
			JP	10503606 T	31-03-1998
			NO	964128 A	28-11-1996
			WO	9527242 A2	12-10-1995
EP 0599606	A	01-06-1994	EP	0599606 A2	01-06-1994
			JP	6214820 A	05-08-1994
EP 0895399	A	03-02-1999	EP	0895399 A1	03-02-1999

EPO FORM P/038

For more details about this annex : see Official Journal of the European Patent Office, No. 12/02